LETTERS

Diabetes—What's in a Name?

The American Diabetes Association (ADA) new diagnostic criteria for the diagnosing of diabetes, recommending a fasting plasma glucose (FPG) value for people without clinical symptoms, provides a much simpler method to diagnose diabetes than the oral glucose tolerance test (OGTT) required by the World Health Organization (WHO).[1] The ADA suggest that the FPG is simpler, less expensive, more acceptable to patients and more reproducible but will result in fewer people being diagnosed with diabetes. We have examined all glucose tolerance tests performed at Bournemouth between January and July 1997 and reclassified them according to the 'new' ADA recommendations.

Number of OGTT = 219
Excluded because screened for gestational diabetes = 95
Total of OGTT analysed = 124
(70 male; average age 64 years ranging from 46–82 years)

Results

Thus, 4 % would have their status changed from impaired glucose tolerance to 'diabetes' but worryingly, 11 % of patients previously labelled as 'diabetic' would now be re-classified as 'not diabetic' or having impaired fasting glucose (Table 1 below). The concern is that these patients would become part of the problem which the ADA sought to address, namely, several years of hyperglycaemia resulting in complications and 'silent' morbidity upon diagnosis. The HbA_{1c} of all patients newly diagnosed with Type 2 diabetes at Bournemouth was 10.4 % ± 3.9 (normal range <6.5 %) but the HbA_{1c} of those who would now be reclassified as not having diabetes was 6.3 % ± 1.1.

In Bournemouth there is a nurse-led open access system whereby newly diagnosed Type 2 patients are seen within 1 week of diagnosis. Data have been collected on a group of 156 patients who entered this programme in 1994 and have been followed up for 3 years. 16 % of these were diagnosed through OGTT. If these were to be re-classified according to the ADA recommendations, 10 % would not be diagnosed as having diabetes. Fortunately, only one patient out of this 10 % had complications of diabetes detected at diagnosis and this person is also the only one to require medication to control his diabetes.

This is a small local sample but the conclusion based on this evidence suggests that the recommendation of the ADA of using FPG in preference to OGTT would reduce the numbers of individuals with diabetes but would not result in missing the complications of diabetes at least over a 3-year period.

D. Kerr, D.A. Cavan, J. Everett
Diabetes and Endocrine Centre, Royal Bournemouth Hospital, Bournemouth, Dorset, BH7 7DW, UK

Reference

1. Harris MI, Eastman RC, Cowie CC, Flegal KM, Eberhardt MS. Comparison of diabetes diagnostic categories in the U.S. Population According to 1997 American Diabetes Association and 1980–1985 World Health Organization Diagnostic Criteria: *Diabetes Care* 1997; **20**: 1859–1862.

Spouse's Worries Concerning Diabetic Partner's Possible Hypoglycaemia

Occurrence of severe hypoglycaemia[1] is common[2] and can have major negative consequences, ranging from embarrassment to phobic fear[3] to death.[4] Clinical experience suggests these negative sequelae affect both the patient and their families, including parents,[5] spouses, and children. There has been only one study that quantified this impact. Gonder-Frederick *et al*.[6] studied an American sample volunteering for a long-term clinical trial.[7] They found spouses of patients with frequent severe hypoglycaemia had more fear of hypoglycaemia, more marital conflict surrounding diabetes management, and more sleep disturbance while worrying about nocturnal hypoglycaemia than spouses whose diabetic partner had not had recent severe hypoglycaemia. The current data comes from another country (Switzerland), from patients who were not participating in a clinical trial.

Participants were emergency room patients presenting for the treatment of severe hypoglycaemia at the University Hospital, Basel. All patients had Type 1 diabetes mellitus, reported a mean of 6.1 episodes of severe hypoglycaemia in their lifetime, and a mean of 2.0 in the past year. Mean duration of diabetes was 17.7 ± 11 years. Spouses were asked to participate in a home interview dealing with 'living with hypoglycaemia'; five refused. There were 38 husbands and 22 wives, average age 43 ± 16 years. During a structured interview, spouses were asked three questions concerning severe hypoglycaemia (Table 1 overleaf).

This culturally different sample and different data collection strategy revealed findings similar to the American study:[6] the psychosocial impact of severe hypoglycaemia goes beyond the patient experiencing the event. While this survey did not have a comparison group, it did demonstrate that the possibility of a partner having severe hypoglycaemic has multiple implications. When the partner is late, for nearly 1/5 of the subjects the first concern was the possibility of a severe hypoglycaemic episode. Severe hypoglycaemia was a source of concern or 'consternation' for 2/3 of the sample. Finally, for nearly 10 % of the spouses,

Table 1. Changes in diagnostic status from WHO criteria to ADA criteria (mean)

Number	%	FBS (mmol l^{-1})	SD	2 h value (mmol l^{-1})	SD	WHO definition	ADA definition
57	46	4.8	0.8	6.5	1.5	No diabetes	No diabetes
0.8	14	6.5	0.3	9.4		Impaired glucose tolerance	Impaired fasting glucose
9	7	5.6	0.3	9.8	2.1	Impaired glucose tolerance	No diabetes
5	4	7.8	0.7	9.5	1.2	Impaired glucose tolerance	Diabetes
3	2	5.7	0.2	12.9	0.2	Diabetes	No diabetes
11	9	6.6	0.4	14.1	2.0	Diabetes	Impaired fasting glucose
22	18	9.2	1.6	16.3	3.2	Diabetes	Diabetes

CCC 0742–3071/98/070619–04$17.50

Table 1. Questions asked of spouse and distribution of responses

1. What do you think when your partner does not show up at an appointed time?	
Sure that s/he is suffering from hypoglycaemia	17.3 %
Concerned that something might have happened, e.g. accident	60.3 %
Other thoughts	22.4 %
2. What is your emotional reaction to severe hypoglycaemia?	
Consternation	67.3 %
Keep relatively calm	31.7 %
3. Is the potential of a severe hypoglycaemia a family burden?	
Always	9.1 %
Sometimes	47.3 %
Never	41.8 %

the possibility of severe hypoglycaemia was 'always' a burden.

Further research is needed to determine whether some spouses and marriages are more vulnerable to psychosocial problems secondary to recurrent severe hypoglycaemia. Clinical experience suggests that, for some couples, such hypoglycaemia stress can perpetuate problems with severe hypoglycaemia. For example, spousal concern about future severe hypoglycaemic episodes can trigger attempts to take more control over diabetes management, with more resistance to treatment assistance in patients.[8] Couples who demonstrate such power struggles should be referred for marital therapy to address these issues and improve their ability to cope with hypoglycaemia.

We would expect that spouses, like patients,[3] develop more fear of hypoglycaemia the more traumatic its past consequences. Severe hypoglycaemia may have similar psychosocial ramifications for children who have discovered their diabetic parents stuporous or unconscious and in need of emergency treatment. We believe that the psychosocial impact of hypoglycaemia on family members deserves increased clinical and empirical attention.

M. Stahl,[1] W. Berger,[1] H. Schaechinger,[1] D.J. Cox[2]

[1]*Division of Endocrinology, Diabetology and Clinical Nutrition, University of Basel, Switzerland*

[2]*Department of Psychiatric Medicine, University of Virginia Health Sciences Center, Charlottesville, Virginia, USA*

References

1. The Diabetes Control and Complications Trial Research Group. Influence of intensive diabetes treatment on quality-of-life outcomes in The Diabetes Control and Complication Trial. *Diabetes Care* 1996; **19**: 195–203.
2. Gold AE, MacLeod KM, Frier BM. Frequency of severe hypoglycaemia in patients with Type 1 diabetes with impaired awareness of hypoglycaemia. *Diabetes Care* 1994; **17**: 697–703.
3. Irvine A, Cox DJ, Gonder-Frederick LA. The fear of hypoglycaemia scale. In. Bradley C, ed., *Handbook of Psychology and Diabetes*. Netherlands: Harwood Academic Publishers, 1994: 133–155.
4. Lorenz R, Siebert C, Cleary P, Santiago J, Heyse S, for the DCCT Research Group. Epidemiology of severe hypoglycaemia in the DCCT. *Diabetes* 1988; **37**: 3A.
5. Clarke WL, Gonder-Frederick LA, Miller S, Richardson T, Snyder A. Maternal fear of hypoglycaemia in their children with insulin-dependent diabetes mellitus. *J Pediatr Encodcrinol Metab* 1998; **4**: 189–194.
6. Gonder-Frederick LA, Cox DJ, Kovatchev B, Julian D, Clarke W. The impact of severe hypoglycaemic episodes in patients with IDDM on spouses' psychosocial status and marital relationships. *Diabetes Care* 1997; **20**: 1543–1546.
7. Cox DJ, Gonder-Frederick LA, Polonsky W, Schlundt D, Julian D, Clarke W. A multi-center evaluation of blood glucose awareness training-II. *Diabetes Care* 1995; **18**: 523–528.
8. Polonsky WH. Besieged by the diabetes police. *Diabetes Forecast* 1995; **12**: 21–26.

Panhypopituitarism, Neurosensory Deafness and Noonan's Syndrome in a Child of a Diabetic Mother: Role of Maternal Hypoglycaemia during Pregnancy in Induction of Congenital Lesions

We describe a Type 1 diabetic patient with severe and recurrent hypoglycaemic episodes during her pregnancy who gave birth to a child with severe lesions. The patient is a 28-year-old woman with Type 1 diabetes mellitus diagnosed at the age of 3 years. Her knowledge of diabetes was good and, during the course of her disease, glycated haemoglobin measurements have usually been within or close to the reference levels. She never smoked. Her first two pregnancies and deliveries were without complications.

At the beginning of her third pregnancy at the age of 27 years she had no signs of nephropathy, normal blood pressure levels, and fundal photographs demonstrated only solitary dot haemorrhages. During the pregnancy she mesaured her blood glucose concentration 4–6 times daily. From the start of gestational week 6 and to the end of week 11, 41 of 120 registered blood glucose concentrations were ≤ 4 mmol l^{-1} and 19 ≤ 2 mmol l^{-1}. HbA_{1C} levels from week 6 to week 16 decreased from 6.3 % to 4.2 %, the lower reference level in the non-diabetic range in our laboratory. The levels were lower than in the previous two pregnancies. She suffered five hypoglycaemic comas, had marked tremor in connection with one hypoglycaemic episode and experienced pronounced tiredness during 13 further hypoglycaemic episodes. After 38 weeks of pregnancy she gave birth to a female infant with a weight of 3.250 kg, a length of 47 cm and head circumference of 38 cm. The infant cried at once, and the Apgar scores were 8, 8, 9, respectively. Her initial blood glucose concentration was low (1.4, 0.9, and 1.6 $mmol^{-1}$) and the hypoglycaemia lasted for 40 hours. In addition obstipation and gastric retention were found. Non-immunological icterus also developed. Further investigations revealed panhypopituitarism in the infant. Computer tomography of the brain and pituitary demonstrated no pathological morphology. l-Thyroxine, cortisol, and growth hormone replacement was started at day 10 postnatally. Later she required hearing aids for congenital neurosensory defects and spectacles because of myopia. At the age of 5 years, she has moderate psycho-motor retardation and has been diagnosed with Noonan's syndrome.[1] The diagnosis is based on the findings of short neck stature, hypertelorism, characteristic facial changes, mild mental retardation, and peripheral pulmonary stenosis.

Noonan's syndrome can occur spontaneously, occasionally in association with pituitary hormonal deficiencies, and